

Ohio OST

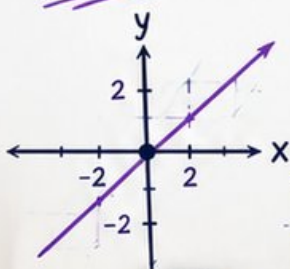
GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

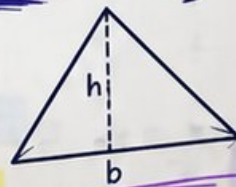
$$y = mx + b$$



**BUILD
CONFIDENCE.
SHARPEN SKILLS.
ACE YOUR
EXAM!**

Practice
Today
Succeed
Tomorrow!

$$A = \frac{1}{2}bh$$



7 PRINTED
TESTS



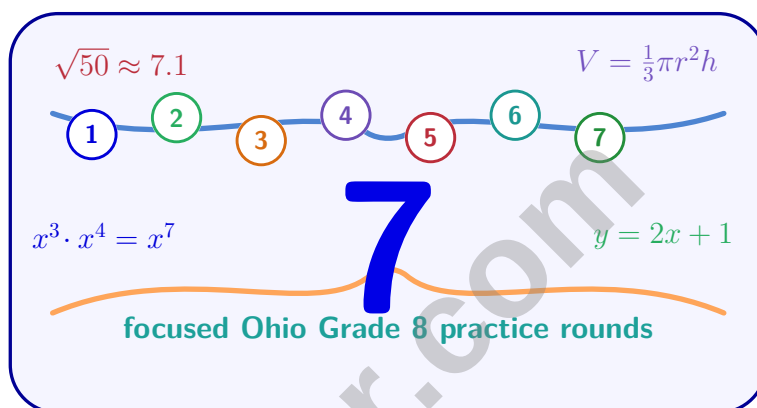
2 ONLINE
TESTS



Use these **two additional** online practice tests
for extra review after the printed tests in this book.

7 Ohio OST Grade 8 Math Practice Tests

Seven Grade 8 OST Rounds for Stronger Test-Day Thinking



Seven complete 40-question Grade 8 OST practice rounds with real numbers, exponents, scientific notation, equations, functions, transformations, geometry, data analysis, probability, answer keys, and clear explanations for every item.

Jay Daie and Reza Nazari



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Welcome, Ohio Grade 8 Problem Solver!

Seven focused rounds for sharper OST math thinking

This book gives you seven full Grade 8 OST math practice tests. Each round is built to help you recognize structure, reason with real numbers and exponents, analyze linear relationships, connect equations with graphs, and explain your thinking with care.

Your Ohio Practice Promise

I will read every question carefully, choose a strategy that fits, write enough work to prove my answer, and use corrections as training for the next test.

Read

Model

Verify

How to Use This Book

A seven-session plan for confident Grade 8 review

1. **Warm up with the review pages.** Notice the big ideas before starting the tests.
2. **Complete one test at a time.** Treat each 40-question round like a real practice session.
3. **Show your reasoning.** Jot an exponent rule, equation, graph, transformation, diagram, or quick estimate when it helps.
4. **Correct actively.** Rework missed items before reading the explanation.
5. **Choose the next target.** After each test, name one skill and one habit to improve.

Ohio review rhythm: Work a test, score it, study your misses, then come back ready for the next round with one clear goal.



What Is Inside?

Seven OST tests, 280 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real and irrational numbers, integer exponents, scientific notation, equations, and careful reading.
Tests 4–6	Slope, systems of equations, functions, inequalities, transformations, congruence, and similarity.
Test 7	Pythagorean reasoning, volume, data analysis, linear models, probability, mixed review, and stamina.
Answer Pages	Compact keys and explanations that show why each answer works.

The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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& answers

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1) Is $\sqrt{22}$ closer to 4.6 or 4.7?

☐ A. 4.6

☐ C. Equally close

☐ B. Cannot determine

☐ D. 4.7

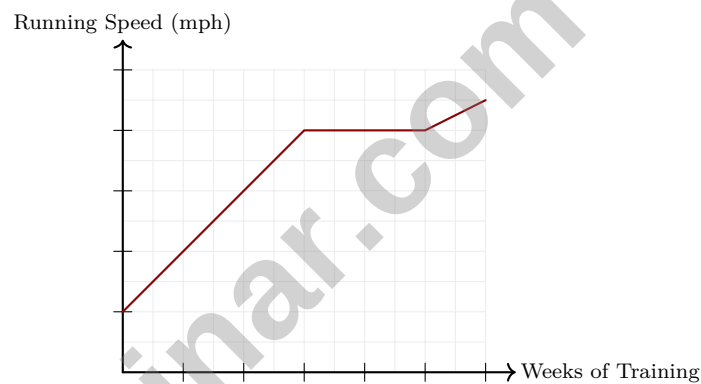
2) For what value of c does the system $\begin{cases} y = 2x + 3 \\ y = 2x + c \end{cases}$ have no solution?

☐ A. $c = 3$ only

☐ C. Any $c \neq 3$

☐ B. $c = 0$ only

☐ D. c can be any value



3)

A runner trains for 6 weeks. Speed increases for the first 3 weeks, stays constant for 2 weeks (maintenance phase), then improves slightly. During weeks 3–5, what is the runner's speed trend?

☐ A. Speed continues to increase

☐ C. Speed decreases

☐ B. Speed remains constant

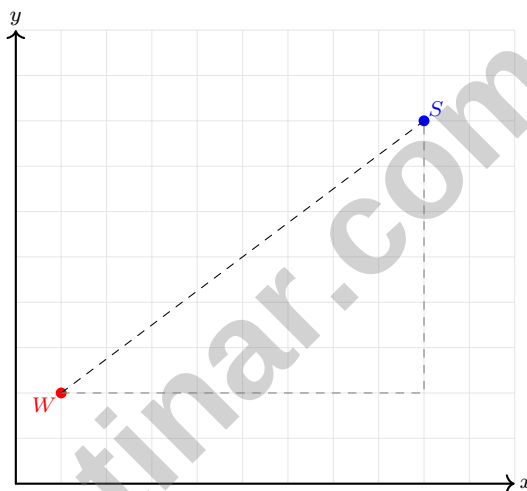
☐ D. Speed fluctuates randomly



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- 4) A runner trains at 6 miles per hour. Write the equation $d = kt$ for distance d (miles) and time t (hours). What is k ?

- 5) A delivery truck travels from warehouse $W = (1, 2)$ to store $S = (9, 8)$. What is the distance in units?



- ☐ A. 10 units ☐ C. 14 units
☐ B. 8 units ☐ D. $\sqrt{90}$ units
- 6) Each interior angle of a regular polygon is 108° . How many sides does the polygon have?
- ☐ A. 5 ☐ C. 7
☐ B. 6 ☐ D. 8

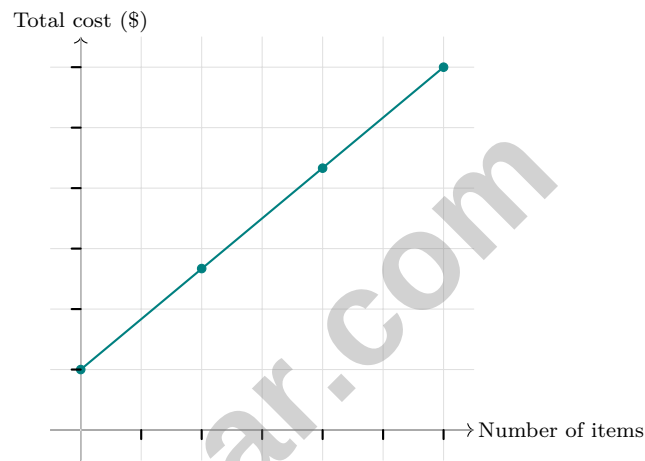


- 7) If Figure M is similar to Figure N with scale factor 2, and Figure N is similar to Figure O with scale factor 2, what is the scale factor from Figure M to Figure O ?



- ☐ A. 2
☐ B. 4

- ☐ C. $\frac{1}{2}$
☐ D. 1



8)

Based on the scatter plot, write the equation of the best-fit line in the form $y = mx + b$. What is the slope?

- ☐ A. $\frac{1}{6}$
☐ B. $\frac{5}{6}$

- ☐ C. 1
☐ D. 6

- 9) A line has slope $\frac{3}{2}$ and y -intercept -1 . The inequality with this solid boundary and shading above is:

- ☐ A. $y > \frac{3}{2}x - 1$
☐ B. $y \geq \frac{3}{2}x - 1$

- ☐ C. $y < \frac{3}{2}x - 1$
☐ D. $y \leq \frac{3}{2}x - 1$



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1) Simplify using the laws of exponents: $\frac{x^7}{x^3}$

☐ A. x^{10}

☐ B. x^{21}

☐ C. x^4

☐ D. x^{-4}

2) Solve for x : $3(x - 4) = 2x + 5$

☐ A. $x = -7$

☐ B. $x = 7$

☐ C. $x = 17$

☐ D. $x = 9$

3) Compute $(2.5 \times 10^3) \times (4 \times 10^2)$ and write your answer in scientific notation.

4) What is the y -intercept of $y = -\frac{1}{2}x + 4$?

☐ A. $-\frac{1}{2}$

☐ B. $\frac{1}{2}$

☐ C. -4

☐ D. 4

5) A student reads 25 pages of a book per day. How many days to read 200 pages? (Proportional relationship.)

☐ A. 5 days

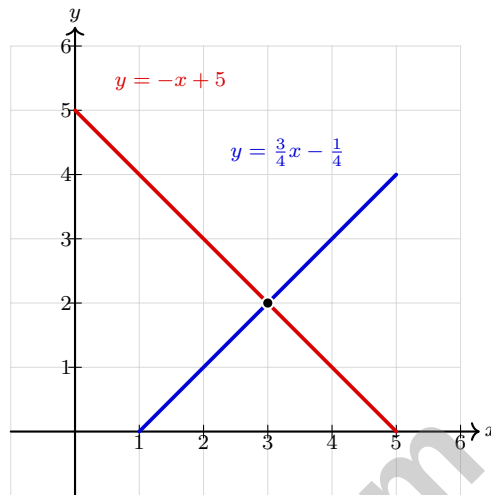
☐ B. 6 days

☐ C. 7 days

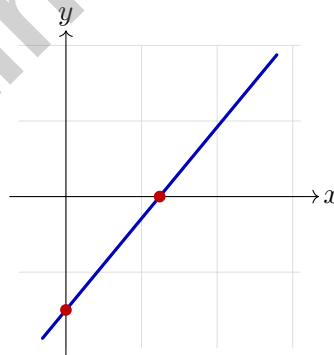
☐ D. 8 days



- 6) Use the graph to identify the solution to the system: $y = -x + 5$ and $y = \frac{3}{4}x - \frac{1}{4}$.



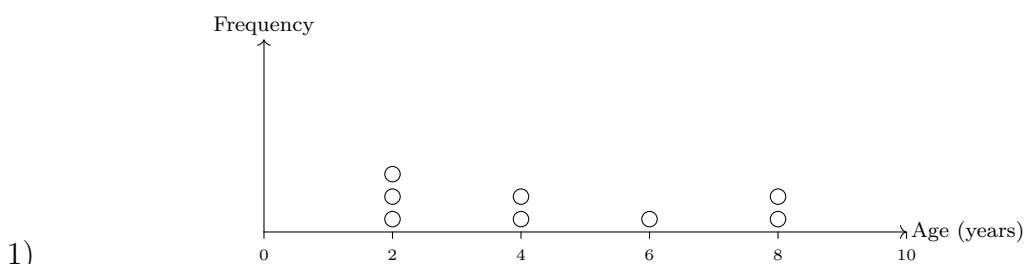
- ☐ A. (2, 3) ☐ C. (4, 1)
- ☐ B. (5, 0) ☐ D. (3, 2)
- 7) A function has a y -intercept of -3 and an x -intercept of 2 . On the graph, these appear at which points?



- ☐ A. (0, -3) and (2, 0) ☐ C. (0, 2) and (-3 , 0)
- ☐ B. (-3 , 0) and (0, 2) ☐ D. (2, 0) and (0, 0)



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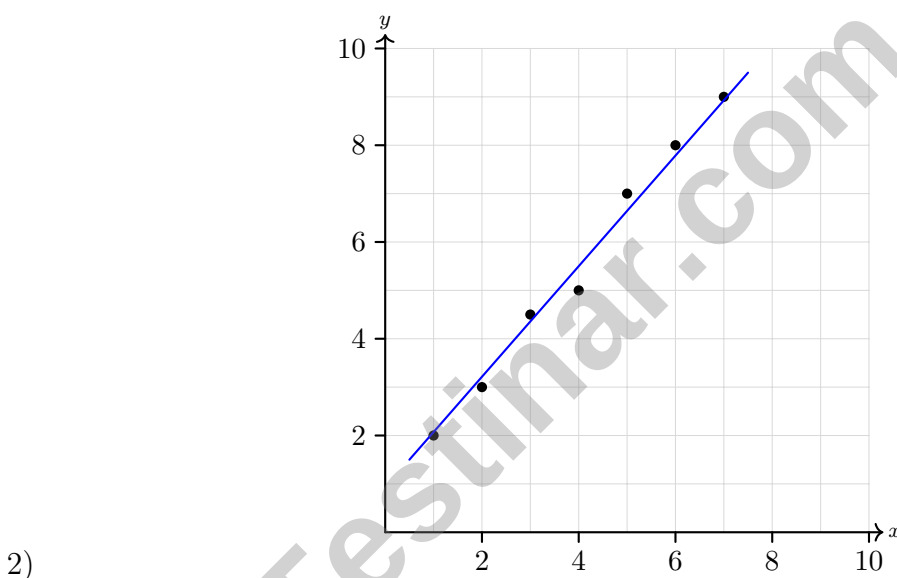


Children's ages: 2, 2, 2, 4, 4, 6, 8, 8 (mean = 5). What is the MAD?

☐ A. 1.75

☐ C. 2.25

☐ B. 2

☐ D. 3


Which statement best explains why the trend line does NOT pass through every data point?

☐ A. The data is not perfectly linear; there is natural variation

☐ C. Some data points are too far from the line

☐ B. The trend line is drawn incorrectly

☐ D. The axes are not labeled correctly


3)

	1	2	3
Red	R1	R2	R3
Blue	B1	B2	B3

The table above shows all possible outcomes when selecting a color and a number. How many total outcomes are there?

☐ A. 5☐ C. 8☐ B. 6☐ D. 9

4) A password requires choosing a color and a number from 1 to 9. There are 5 colors available. How many different passwords are possible?

☐ A. $5 + 9 = 14$ ☐ C. $9^5 = 59,049$ ☐ B. $5 \times 9 = 45$ ☐ D. $\frac{9}{5} = 1.8$

5) Is $\sqrt{12}$ greater than or less than 3.5?

☐ A. Greater than 3.5☐ C. Exactly 3.5☐ B. Cannot determine☐ D. Less than 3.5

6) Which of the following is rational?

☐ A. π ☐ C. 0.101001000... (non-repeating)☐ B. $\sqrt{15}$ ☐ D. $\sqrt{36}$

7) Which fraction is equivalent to $0.\overline{999}$?

☐ A. $\frac{999}{1000}$ ☐ C. $\frac{1}{999}$ ☐ B. $\frac{9}{10}$ ☐ D. $\frac{999}{999} = 1$ 

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& answers

Ohio OST Grade 8 Practice Test Answer Keys**How to use this section with a Grade 8 student:**

1. check the answer first and circle any item that needs another look
2. retry the problem with fresh work before reading the explanation
3. write one short lesson learned from each missed or guessed item

A strong review routine turns every correction into a sharper plan for the next Ohio OST practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice D is correct.** **(8.NS.2)** $(4.6)^2 = 21.16$ and $(4.7)^2 = 22.09$. Since 22 is closer to 22.09, $\sqrt{22}$ is closer to 4.7.
- 2) **Choice C is correct.** **(8.EE.8)** Both equations have slope 2. If $c \neq 3$, the lines are parallel and have no solution. If $c = 3$, the equations are identical and there are infinitely many solutions.
- 3) **Choice B is correct.** **(8.F.5)** The graph shows a flat horizontal line from week 3 to week 5 at 4 mph, indicating no change in speed. This is the maintenance phase after rapid early gains.
- 4) **The correct answer is 6.** **(8.EE.5)** The unit rate is 6 miles per hour, so $k = 6$ and $d = 6t$.
- 5) **Choice A is correct.** **(8.G.8)** $d = \sqrt{(9-1)^2 + (8-2)^2} = \sqrt{8^2 + 6^2} = \sqrt{64 + 36} = \sqrt{100} = 10$ units.
- 6) **Choice A is correct.** **(8.G.5)** Using $\frac{(n-2) \times 180}{n} = 108$: $(n-2) \times 180 = 108n \Rightarrow 180n - 360 = 108n \Rightarrow 72n = 360 \Rightarrow n = 5$.
- 7) **Choice B is correct.** **(8.G.4)** Composite scale factor: $2 \times 2 = 4$. Scaling is transitive.
- 8) **Choice B is correct.** **(8.SP.3)** The line passes through $(0, 1)$ and $(6, 6)$. Slope $= \frac{6-1}{6-0} = \frac{5}{6}$.
- 9) **Choice B is correct.** **(8.EE.8c)** Shading ABOVE the line requires $\geq$ or $>$. A solid line is shown, so $\geq$ is correct.
- 10) **The correct answer is $x = 4$.** **(8.EE.7b)** Distribute the 2: $6x - 2 = 4x + 6$. Subtract $4x$ from both sides: $2x - 2 = 6$. Add 2 to both sides: $2x = 8$. Divide by 2: $x = 4$. Verify: $2(3(4) - 1) = 2(11) = 22$ and $4(4) + 6 = 22$ ✓.
- 11) **Choice A is correct.** **(8.EE.8c)** GCF of $10x$ and 25 is 5, so $10x + 25 = 5(2x + 5)$ is completely factored (since $2x + 5$ is linear and cannot be factored further).
- 12) **Choice A is correct.** **(8.F.2)** $A(20) = 2.99 + 0.50(20) = 12.99$. B slope: $(6-1)/10 = 0.5$, so $B(20) = 1 + 0.5(20) = 11$. Since $12.99 > 11$, Plan A costs more.
- 13) **Choice A is correct.** **(8.F.4)** Initial length is 10 cm (when $w = 0$). Change from 2 to 4 weights: length goes from 14 to 18 cm, a change of 4 cm for 2 weights, so slope is 2. Equation: $L = 2w + 10$.
- 14) **Choice B is correct.** **(8.G.3)** Start at $(0, 0)$. After translation right 2: $(2, 0)$. After rotation 90° counterclockwise: $(-0, 2) = (0, 2)$. After reflection across x -axis: $(0, -2)$.
- 15) **Choice D is correct.** **(8.G.5)** Use the triangle angle sum: $50 + 30 + \angle ACB = 180$. So $\angle ACB = 180 - 50 - 30 = 100^\circ$.
- 16) **Choice A is correct.** **(8.G.6, 8.G.7)** From $(\sqrt{5})^2 + (\sqrt{20})^2 = c^2$, we get $5 + 20 = 25$, so $c = \sqrt{25} = 5$.
- 17) **Choice C is correct.** **(8.G.7)** If the angles are $2k$ and $3k$, then $2k + 3k = 90$, so $5k = 90$ and $k = 18^\circ$. The angles are 36° and 54° .
- 18) **Choice B is correct.** **(8.G.7)** $V_X = \frac{1}{3} \times 64 \times 10 \approx 213.3 \text{ cm}^3$. $V_Y = \frac{1}{3} \times 60 \times 12 = 240 \text{ cm}^3$. Pyramid Y is larger.
- 19) **Choice C is correct.** **(8.G.7)** Triangle $= \frac{1}{2} \times 6 \times 8 = 24 \text{ in}^2$. Rectangle $= 6 \times 2 = 12 \text{ in}^2$. Total $= 24 + 12 = 36 \text{ in}^2$.
- 20) **The correct answer is B, E.** **(8.EE.6)** The equation has slope $-\frac{2}{3}$ and y -intercept 5, so B and E are correct. The point $(5, 0)$ is not on the line because $-\frac{2}{3}(5) + 5 = \frac{5}{3}$, not 0. A perpendicular line would have slope $\frac{3}{2}$, not $-\frac{3}{2}$.
- 21) **Choice A is correct.** **(8.SP.1)** Outliers in health data can indicate genuine health risks or data recording errors. Ignoring (B) or removing (C) the outlier without investigation risks missing important health concerns. The outlier should prompt further examination.
- 22) **Choice A is correct.** **(8.SP.4)** A is true: the column-conditional frequency of Math among Debate is $\frac{36}{144} = 0.25$. B uses the grand total instead of the Math row total. C uses the wrong denominator, and D uses the wrong cell count.
- 23) **Choice B is correct.** **(8.G.8)** Expanded data: 4, 4, 8, 8, 8, 12, 12, 12, 12, 12. The mean is 9.2. Deviations: $|4 - 9.2| = 5.2$ (twice), $|8 - 9.2| = 1.2$ (three times), $|12 - 9.2| = 2.8$ (five times). Sum $= 10.4 + 3.6 + 14 = 28$. MAD $= 28/10 = 2.8$.
- 24) **Choice B is correct.** **(8.G.7)** Not Y: X or Z. Total degrees: 360° . Not Y: $120 + 120 = 240$. $P = \frac{240}{360} = \frac{2}{3}$.
- 25) **Choice C is correct.** **(8.EE.7b)** Arranging all 6 books in order is a factorial: $6! = 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$.
- 26) **Choice B is correct.** **(8.NS.2)** A point far from the line is an outlier with a large residual. It suggests an unusual circumstance—perhaps the student was ill, didn't study the right material, or a data error occurred.
- 27) **Choice C is correct.** **(8.NS.1)** $\sqrt{50}$ is irrational because 50 is not a perfect square. The other values are rational: $\sqrt{49} = 7$, $\frac{7}{8} = 0.875$ (terminating decimal), and 2.5 is a terminating decimal.



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The Power of Showing Work

Hi, Organized Solver!

◇ You practiced Grade 8 skills that often require more than one step. That means your written work matters. ◇

★ **Remember this:** Showing work is not extra. It is how you track your thinking, find errors, and prove that your answer did not happen by luck. You practiced across 7 full Grade 8 practice tests, and that repeated effort matters. ★

Organized Work Habits

- **One Line Per Step:** Keep the path readable.
- **Box the Answer:** Make the final result easy to find.
- **Use Labels:** Tell what each value represents.
- **Check the Path:** Follow your steps backward if needed.

Grade 8 test-day tip: When a problem has several steps, write less on each line. Space makes checking easier.

If you want to share something or ask a question, please email me at jay@testinar.com.

Jay Daie

Your Organized-Work Coach

PRACTICE TODAY SUCCEED TOMORROW!

Give your child the confidence and skills they need with **7 full-length Grade 8 Math** practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, strengthening problem-solving abilities, and achieving success on test day!

GRADE 8

Practice
Today
Succeed
Tomorrow!

Algebra

Geometry

Statistics

WHAT'S INSIDE?



Standards-Aligned Practice

Questions designed to cover essential Grade 8 math standards.



Variety of Question Types

Multiple-choice, short answer, and more to build well-rounded skills.



Real-World Applications

Engaging problems that connect math to everyday life.



Step-by-Step Progress

Track improvement and build confidence with every test.



Build Skills & Boost Confidence

Strengthen understanding and feel prepared for test day.

COVERS ALL ESSENTIAL TOPICS

- | | |
|---------------------------------------|----------------------------|
| ✓ The Number System | ✓ Statistics & Probability |
| ✓ Expressions & Equations | ✓ Pythagorean Theorem |
| ✓ Ratios & Proportional Relationships | ✓ Volume & Surface Area |
| ✓ Linear Equations | ✓ Transformations |
| ✓ Functions | ✓ Inequalities |
| ✓ Geometry | ✓ Data Analysis & Graphing |
| ✓ Measurement & Data | ✓ And More! |



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BUILD CONFIDENCE. SHARPEN SKILLS. ACE YOUR EXAM!